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17 July 1957

Ballou, Gen

MEMORANDUM FOR: Chief/SR-7

ATTENTION : [redacted]

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SUBJECT : Information Pertaining to Hydrogen Generators
and Compressors

The following information is from our files on hydrogen generators and compressors and is forwarded in accordance with your oral request of 16 July 1957.

Generators

1. Corps of Engineers - Methanol Steam Generator

A. Performance - 4000 cubic feet per hour (94%) of Hydrogen and 156 lbs. of liquid CO₂ per hour. Gas purity about 94%

B. Availability - To be determined (probably available)

C. Size - 42,000 lbs. Large trailer mounted requires M-52 tractor to move

D. Cost - \$120,000 to reproduce-possibility of getting one for less should be investigated

E. Personnel to Operate - Should be run for several consecutive days - two men per shift - Mechanic type personnel with consulting service (possibly TBS [redacted] personnel) 25X1

F. Materials to Operate per 24 Hours

(1) Fuel Oil	360 gal.
Methanol	456 gal.
Water	31,300 gal.

Other chemicals: Monoethanolamine, Catalyst water treatment, acid, methyl orange cuprous chloride, Cardisorber 760 lbs.

(2) Total estimated cost of raw material per 24 hours (assuming water is free) \$300.00

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(3) Availability - estimated as reasonably easy to obtain

C. Storage - large commercial type garage.

2. Corps of Engineers Catalytic Cracking of Hydrocarbons Generator

A. Performance - 1000 cubic feet per hour of Hydrogen
gas purity about 94%

B. Availability (to be determined - probably available)

C. Size - 42,000 lbs. (same as other)

D. Cost - \$120,000 (same as other)

May be obtainable or loan basis - this will be checked.

E. Personnel to Operate - Same as before - 2 men per shift - should
be run for several days. Mechanic type
personnel with TSS [redacted] personnel to
act as consultant in the event of serious
difficulty.

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F. Materials

(1) Fuel oil - 360 gal.

Diesel or jet fuel - 200 gal. (approx.)

Other chemicals not known at present but it is believed fewer
are needed.

(2) Estimated cost per 24 hours - \$300.00

(This is materials cost alone)

(3) Availability of materials is estimated at very good, enough so
to offset the advantage of the higher rate of the methanol
generator.

G. Storage - Same as other - large commercial type garage.

3. TSS - [redacted] Mobile Generator

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A. Performance - 4000 cubic feet per hour of Hydrogen - gas purity
75% hydrogen purity - nitrogen and ammoniaB. Availability - available now, should have routine tests run before
shipping. If used with a compressor, this should also
be tested - assume one month minimum timeC. Size - 2 ton panel truck (of the type used for milk delivery, etc.)
total weight estimated at 3½ tons including truck

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D. Cost - one now available at no cost to the project
estimated cost to reproduce - \$20,000

E. Personnel to Operate - one mechanic type - extensive warm up and
shut down time is not required.
consulting service should be available
to the operator.

F. Material to Operate - 88.88 lbs. of anhydrous ammonia per hour -
2100 lbs. per 24 hours.
jet engine fuel or diesel oil - 6 gal/hour,
144 gal/24 hours
Cost of materials - availability - no problem
foreseen

G. Storage - Same as any panel truck

Compressors

1. Worthington Type VMA3 - four cylinder, three stage

A. Performance - 14 cubic feet/min to 2000 Psi

B. Availability - commercially available, cost \$2000.00

C. Power Source - requires 6-10 HP electric motor

D. Personnel to operate - generator operator can also handle the compressor

E. Size - shipping weight - 800 lbs.

2. Worthington compressor, next largest size rated at 38 CPM at 2000 Psi,
costs \$7000.00.

3. Information on the Corps of Engineers Compressor is not complete. Their
smallest known unit weighs 7000 lbs., has its own diesel engine power
source. Further information is being sought and will be forwarded with-
out delay.

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Chief
TBS/Engineering Division

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